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| **Joy Canning**  **6th grade**  **90 minutes**  **Renewable Energy**  **Aim:** | How can a city meet the energy needs of its residents in a sustainable way? |
| **Objectives:** | 1. Students will understand how energy is generated and the difference between renewable and non-renewable energy. 2. Students will understand how the use of clean energy sources can sustainably meet the needs of city residents 3. Students will understand the negative impact of air pollution in a city. 4. Students will begin strategizing how to incorporate renewable energy solutions into their city planning. |
| **Access Points:** | Multiple Intelligences:  visual, interpersonal/intrapersonal, auditory, reference sheet, kinesthetic/tactile  [Powerpoint](https://docs.google.com/presentation/d/1FGbwCuW2V6hImc_qvpjccm2DgoTsEIIFfVMxz0Atcbs/edit#slide=id.gfca1150bf_0_0)  Game  <http://energy4me.org/all-about-energy/what-is-energy/energy-sources/>  **\*Pre or Post offsite experience: Future City Lab at the Museum of the City of NY** |
| **Materials:** | [Powerpoint](https://docs.google.com/presentation/d/1FGbwCuW2V6hImc_qvpjccm2DgoTsEIIFfVMxz0Atcbs/edit#slide=id.p)  “Who am I” Game Cards (create using images from energy4me link below)  Energy Source Comparison Chart: <http://energy4me.org/all-about-energy/what-is-energy/energy-sources/>  [Videos](https://www.greenmountainenergy.com/why-green/renewable-energy-101/#biomass)  Journals  [Rubric](https://docs.google.com/document/d/1SM8wOfU1BqKUWpTf6Kjm1Y6u1Ath_oFqDSUe4z0RVEg/edit) |
| **Key Concepts & Questions** | · Renewable/Nonrenewable energy  · Fossil fuels  How can a city integrate renewable energy sources?  In what ways can renewable energy improve our quality of life? |
| **Assessment** | Formative: Do Now: Word Web  Formative: “Who am I” Activity  Formative: Pro/Con Renewable Energy Chart  Summative: Journal Reflection: How can you integrate renewable energy sources into your city development plan? |
| **Do Now**  10 minutes | Create these two word webs in your journal:  RENEWABLE ENERGY & NONRENEWABLE ENERGY  Use information from the video & your background knowledge to fill in ideas and examples for each word.  Watch: [A Never Ending Supply (PBS NOVA)](http://ny.pbslearningmedia.org/resource/nvel.sci.tech.supply/a-never-ending-supply/)  Share ideas. |
| **Connection:**  10 minutes | Review definitions for renewable & nonrenewable energy -- and Fossil Fuels    What do you notice about the sources of the United States’ energy?  What kinds of changes would you like to see in the future? |
| **Mini-Lesson**  30 minutes | 1. Watch each [video](https://www.greenmountainenergy.com/why-green/renewable-energy-101/#biomass) 2. Turn and Talk: explain the renewable energy source in your own words. 3. Class Share: Would this be a good energy source for our city? Why or Why not? 4. In your Journal Make and Complete a **Pro and Con Chart**   Video One: [Biomass Electricity](https://www.greenmountainenergy.com/why-green/renewable-energy-101/#biomass)  Video Two: [Geothermal Power](https://www.greenmountainenergy.com/why-green/renewable-energy-101/#geothermal)  Video Three: [Hydropower](https://www.greenmountainenergy.com/why-green/renewable-energy-101/#hydro)  Video Four: [Solar Power](https://www.greenmountainenergy.com/why-green/renewable-energy-101/#solar)  Video Five: [Wind Power](https://www.greenmountainenergy.com/why-green/renewable-energy-101/#wind) |
| **Group Activity/**  **Assessment**  20 minutes | **“Who am I” Energy Source Game**  Directions:   1. Each person is given an Energy Source Image Card. 2. Keep the card face down. Do NOT look at your card. 3. Using your breath, or tape, attach the image card to your forehead (like in the game Headbands) 4. Each Table will play as a team. The goal is for everyone to correctly guess their energy source. 5. Turns will be taken around the circle. When it is your turn you can ask one “YES” or “NO” question to determine what type of energy source you are. For example. “Am I renewable?” or “Do my pipelines impact the ecosystem?” Use the Energy Source Comparison Chart as a guide. 6. After 5 rounds of questions, you can begin making educated guesses when it is your turn. If you are uncertain who you are, don’t begin guessing, continue to ask questions until you figure it out. 7. If you guess your energy source correctly take another card from the pile, attach it to your forehead and continue to play.   Take **10 minutes** to read through the **Energy Source Comparison Chart**. Using a highlighter, **highlight** one interesting or new-knowledge pro or con from each energy source. You will use this chart to help you ask and answer questions throughout the “Who am I” activity. |
| **Closing/**  **Assessment**  **10 minutes** | In Journals BRAINSTORM: *How could you integrate renewable energy sources into your city development plan?* |
| **Future Application:** | Next class: Create solar ovens and wind turbines to gain a better understanding of how each renewable energy source works. |

Name: Date:

